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XLVI. *Of Torpedos found on the Coast of England. In a Letter from John Walsh, Esq; F. R. S. to Thomas Pennant, Esq; F. R. S.*

Chesterfield-street, June 23, 1774.

DEAR SIR,

Redde, June 23, 1774. **T**O the Author of the British Zoology it will, I am persuaded, be no unwelcome information, that the Torpedo, or Electric Ray, frequents the shores of this island, contrary to a received opinion among Naturalists, who have in general considered it as an inhabitant only of warmer climates.

In consequence of inquiries I had set on foot in some of our southern fishing ports, two Torpedos, taken in Torbay, one in the beginning of August, and the other in the beginning of November, last year, have been actually sent up to this metropolis. The first, procured for me by the good offices of Mr. Amyatt, Apothecary in Berkeley Square, arrived during my absence; but it was examined, and the electrical organs were successfully injected, by Mr. John Hunter. The second, forwarded to me by Mr. Grant, a principal Fishmonger in the Land-carriage branch, then at Brixham, came up very fresh and perfect, in one of his fish-machines. This
I weighed

I weighed and measured before it was touched by the dissecting knife, and found it to weigh fifty-three pounds avoirdupois, and to measure four feet in length, two feet and a half in its extreme breadth, and four inches and a half in its extreme thickness.

The largest Torpedo I met with in the neighbourhood of la Rochelle, where upwards of seventy passed through my hands, weighed little more than ten pounds, and measured not quite two feet in length, nor quite sixteen inches in breadth: and the largest I have read of is that mentioned by Rhedi to Lorenzini ^(a), weighing twenty-four pounds, without doubt of Leghorn, which make about eighteen avoirdupois. Though this Mediterranean Torpedo has been ever considered as of an extraordinary size, it is exceeded in weight nearly three to one by our enormous British Torpedo.

The back of it was of a dark ash-colour, with somewhat of a purple cast, but not at all motled like those of the Atlantic Coast of France, nor regularly marked with eyes, as they have been called, like some found in the Mediterranean. Its under part was white, skirted however with the same ash-colour, which towards its tail became almost universal. The side fins being a little contracted and curled up, prevented the precise measurement of its breadth, but it appeared to hold the general proportion observed in those of la Rochelle; that is, the breadth was two-thirds of the length ^(b). Its electric

(a) Lorenz. Off. intor. alle Torp. p. 4.

(b) The breadth of the Ray-Torpedo of Brazil is, according to Marcgrave, just one-third of the length, falling in with the proportion of the *Squatino-Raia*. See Marcg. Lib. iv. Cap. 6.

organs likewise were proportionate with theirs, each organ measuring fifteen inches in extreme length, and eight in extreme breadth. In short, the Torpedo of Torbay no way differed from those I saw in the Bay of Biscay but in size and colour; and perhaps this difference may be thought rather casual than denoting a specific distinction.

It was a female, without any signs of pregnancy. The intestines contained, with some black slime, two vertebres of a fish, seemingly of the cod kind. The electrical organs of this Torpedo were likewise injected by Mr. Hunter, though not with his first success, from the bursting of the artery in the operation; he determined, however, the number of columns in one organ to amount to 1182, and fully confirmed the observation he formerly made, that their numerous horizontal partitions were very vascular.

Shall I take notice that the rest of this fish was dressed and brought to table, and that some of my friends suffered a little for their curiosity in tasting it? Rondelet speaks unfavourably of the Torpedo as food; and tells us, that at Venice the Prefect of Health forbids it to be sold in the market. But to deem it wholesome diet, we have the sanction of Hippocrates as well as Galen; and if forbid at Venice when Rondelet was there, in the markets of France I know it to be sold. The truth is, that the electrical organs, which make one half of the animal, are, though wholesome to be eaten, an insipid mucilage; but its muscular part is, at least, as palatable as the flesh of the other Rays: among these the old and overgrown are ever in little request. Our Torpedo

was

was doubtless such ; and we must beside confess that, as a rarity, it had been kept too long.

The first Torpedo was not weighed ; but Mr. Hunter, who examined both, assured me, that they appeared to him equal in size, and alike in every other respect ; indeed their electrical organs, preserved to this hour, shew them to have been of the same magnitude. The first was a female likewise, and not pregnant.

The following accounts were received from Brixham, concerning Torpedos found in that quarter.

From Mr. Philip Lyde, Surgeon at Brixham, who forwarded the first, on the 4th of August, 1773.

“ I send a Torpedo, or Numb-fish, which had, “ when living, the greatest effect, as I am informed “ by the men who caught it. There have been “ three taken this week. The one sent seems to be “ of the largest size.”

In an earlier account, dated the 23d June, it is mentioned that one or two are caught there every week.

From Mr. Grant, fishmonger, who sent the second Torpedo, on the 3d November, 1773.

“ The Torpedo, or Numb-fish, is by no means “ plenty in these parts, as it rarely happens that “ more than one is taken at a time ; nor can the “ proper season for catching them be ascertained, as “ they have been seen at all times of the year. The “ usual depth of water in which they are caught is “ from thirty-six to forty fathom ; and being of the “ Ray kind, they are commonly taken with them. “ As to the time when their young are to be seen, no “ satisfactory information can be obtained ; but it is

" imagined that the season for them and the Rays is
 " the same. Their numbing quality is pretty strong
 " through the net, though much weaker than when
 " they are taken out. The general name by which
 " they are known here, is the Numb or Cramp-fish.
 " Few or no small Torpedos are to be met with in
 " these parts, those hitherto caught being from ten
 " to sixty, seventy, and eighty pounds weight;
 " which may probably proceed from the young
 " being thrown away promiscuously with other offal
 " fish."

At la Rochelle, during the intire month of July,
 most of the larger female Torpedos, being those from
 fifteen inches to two feet in length, were found with
 an uncertain number of eggs in their matrices, the
 largest females appearing to have the greatest num-
 ber. The eggs of the same female differed little
 from each other as to forwardness; nor did the eggs
 of one female differ much from those of another:
 the embryo in all was but little advanced. A letter
 from M. Saunier of la Rochelle, written about six
 weeks after I had left that place, informed me,
 that on the 10th September, he opened a very large
 Torpedo of about two feet and a quarter by one
 and a half, and discovered floating in the left matrice
 nine fetuses quite formed, near two inches long, and
 distinct from them nine eggs in no state of forward-
 ness; and that in the right matrice he met with
 four such fetuses and nine such eggs. The obser-
 vation, therefore, of Aristotle, that the Torpedo
 brings forth at the autumnal equinox, is well founded,
 notwithstanding Lorenzini has questioned the fact.

From the remarkable superfetation in this instance,
 we may besides infer, that the Torpedo, agreeably
 to

to Aristotle's information, concerning the cartilaginous fish in general, goes with young near six months; as the eggs here found seem, from their being so little advanced in so late a time of the year, to be destined for the spring-brood. Lorenzini's dissections of female Torpedos big with eggs in February and March, and of others without any in April, shew that they produce about the vernal as well as autumnal equinox. This was confirmed by the many young Torpedos we met with in the month of July, from four and a half to six inches long, which were evidently the offspring of that year. Among these, however, was one, taken on the 4th July, weighing one ounce, and measuring four inches and a half by three, which had still its native yolk unconsumed in its abdomen. By this circumstance it appears, that there may be a production likewise at Midsummer; but our general observations led us to conclude, that it principally takes place at the two equinoxes. I have dwelt the longer on the season in which foreign Torpedos bring forth, as we are yet entirely ignorant on that point with regard to those of our colder climate, and as this knowledge may, in some degree, assist us in knowing when and where to look for the animal. Most fish, we are told, approach the shore in the summer season; and the Torpedo will doubtless then, in quest of food, and of a warmer element, both for itself and for its young, haunt the shoal water. In the cold and tempestuous part of the year, we shall probably find it in a deeper sea, which then affords it the more mild and still retreat.

My learned friend Dr. George Baker has procured for me a drawing and some account of a Torpedo,
taken

taken about five years since in Mount's Bay in Cornwall. The particulars, as they were lately collected by Mr. Scobell of Penzance, from the fisherman who took it, are these: "that he judged it on memory to have weighed about forty pounds, and to have been about three feet long and two and a half broad; that its skin was smooth like an eel, dark-brown on the back, and white underneath; and that it had been caught with a large hook, in the month of March, on sandy ground."

For the sake of Oppian's fine description of the capture of the Torpedo, which Claudian has elegantly paraphrased, and which you, struck with the passage, have rendered in English metre, I am glad the Torpedo is found to take the hook. That description, though thought to have been fabulous, proves to be no less just in each circumstance, than, as it was always confessed to be, poetically beautiful in the whole.

But to catch with the greatest success the Torpedo, as well as other flat fish, which keep near the ground, the trawl, or drag-net, must be used. This kind of fishing is much practised in Torbay; but in Mount's Bay, as I am informed, not yet adopted; which may be the chief reason why the Torpedo has but seldom been taken at the one, and so very frequently at the other place.

I had an opportunity last autumn of making a short visit to Dungarvan in Ireland, where Smith in his History of Waterford, as you have remarked, mentions a Torpedo of six or eight pounds^{as} to have been found about thirty years since. The fishery there, which is very considerable, is wholly carried on with hook and line, and the fishermen were entire strangers to the Torpedo. But at Ring, a fishing village

village in the neighbourhood, furnishing about fourteen or fifteen small vessels, with which they practise pole-trawling, the fishermen were acquainted with it. They told me, that they sometimes caught one or two in a year, and sometimes none for two or three years; that they had taken two that year, and one the year preceding; that these were about eighteen inches long, and fourteen broad, and were caught a league off shore; that the fish benumbs those who touch it, and that they had been benumbed by it; and that its name in Irish is *Aungbelláw*. From this name it might seem that they confounded it with the Angel-fish: but by their description, both of the animal and its effects, it was plain they knew and meant the Torpedo.

To prove the electrical effect of the animal, the curious should be informed, not only where to find, but how best to preserve it alive. The Electric Ray is so far amphibious as to exist in air twenty-four hours: in fresh water it survives but little longer. Well-boats kept in salt water, and not put into much motion, may best suit it: In reservoirs on shore, which on sea-coasts are not unfrequent, it will be subject to be annoyed, notwithstanding its electrical armour, by the Sea-leach and the common Sea-crab. A commodious well-boat we experienced might soon be made from a small flat-bottomed boat, termed by the French *Pousse-pied*; which, partitioned with laths into three or four chambers, and secured in the same manner at the top, kept floating, from its leaky state, just even with the water. In this pen we were able to preserve them several days, and always without food; for though in the stomach of
these

these animals, when taken, a Plaice or Surmullet may, as we have seen, be found, yet in confinement they neglect all kinds of prey: it will be easy however, as they are of a quiet nature, to force them to swallow food, if necessary.

But the frequent, and perhaps favourite situation of the Torpedo is to lie in concealment under sand. If he be placed by design, as he is sometimes left by accident, in any hollow of a sandy beach, from whence the tide has just retired, he swims to that brink where the water is still draining away, and on finding himself unable after repeated attempts to push himself over the shallow, and follow the course of the tide, he begins with admirable address to bury himself in the sand, and by a gentle but quick flapping of his extremities all round soon sinks himself a bed, and in the action throws the sand in a light shower over his back. Neither the animal nor the spot he is in can now be distinguished; save only that, on a nice search, his two small inspiratory foramina, and their membranes at play, may be perceived. It is in this situation that the Torpedo gives his most forcible shock, which throws down the astonished passenger who inadvertently steps on him.

I have thus shewn that Great Britain too claims the Torpedo, or Electric Ray; that ours is the *broad marine* sort, which Socrates, as Meno thought, resembled; and that it is the *black Torpedo*, whose influence subdues obstinate Head-achs, and the Gout itself (c). In announcing to our Naturalists and

(c) Scribonius Largus, Cap. 1. & 41. See also several of the early physicians, Roman and Arabian, for different cures ascribed by them to the effect of the Torpedo.

Electricians the presence of this wonderful guest, I should certainly felicitate our Invalids on their acquisition, but that *the Leyden phial contains all his magic power.*

I remain, with true esteem.

DEAR SIR,

Your affectionate and obedient servant,

JOHN WALSH.